CASE REPORT

URINARY TRACT INFECTIONS

Prostatic abscesses. A case report and review of the literature on current treatment approaches

Mariam Choudhry[1], Gianluca Pellino[1], Constantinos Simillis[1], Shengyang Qiu[1], Christos Kontovounisios[1,2]

[1]*Department of Colorectal Surgery, Chelsea and Westminster Hospital, Chelsea, United Kingdom*
[2]*Department of Surgery and Cancer, Imperial College, London, United Kingdom*

Citation: Choudhry M, Pellino G, Simillis C, Qiu S, Kontovounisios C. Prostatic abscess. A case report and review of the literature on current treatment approaches. Cent European J Urol. 2017; 70: 118-122.

Article history
Submitted: Oct. 22, 2016
Accepted: Jan. 9, 2017
Published online: Jan. 25, 2017

Corresponding author
Christos Kontovounisios
369, Fulham Rd.
W10 9NH London, UK
phone: +44 7845589286
c.kontovounisios@imperial.ac.uk

Prostatic abscess (PA) is a rare clinical entity due to a variety of causative organisms including gram-negative bacilli, anaerobic and fungal agents. We report on a 55-year-old, HIV$^+$ patient presenting with a 2-week history of urethral discharge and a large PA. He was successfully treated with a combination of radiological-guided transperineal drainage plus antibiotics. Treatment decisions in patients with PA are multifactorial and should be made with all diagnostic information available from the most current modes of medical imaging. In the case of PA several factors should be assessed, including size of the prostate, size, location and frequency of abscesses, previous pelvic surgery, relevant co-morbidities and risk factors, and patient preference.

Key Words: prostatic abscess ‹› US-guided drainage ‹› antibiotic treatment ‹› HIV

CASE PRESENTATION

A 55-year-old, HIV$^+$ male patient presented with a 2-week history of urethral discharge, urinary frequency, hesitancy, poor stream, *nocturia* and straining. Rectal examination revealed a smooth albeit tender prostate gland. Investigations on admission showed elevated inflammatory markers with deranged kidney function markers.

The patient's medical history included type 2 diabetes mellitus and chronic pancreatitis. He also had a complex urological history involving atazanavir-related chronic kidney disease, renal stones, perinephric abscess, and previous nephrostomy and stent of the left kidney. An ultrasound scan of the kidneys, ureters and bladder soon after admission revealed no abnormalities.

The patient was initially treated with carbapenem antibiotics, until analysis of midstream urine samples revealed *Escherichia coli* and *Proteus mirabilis*, both of which were sensitive to ciprofloxacin. This was therefore commenced 2 days after admission.

The patient's persistent discomfort prompted a clinical suspicion of PA, which was then confirmed by pelvic MRI (Figure 1). The scans showed a large prostatic collection approximately 5.6 cm in greatest cranio-caudal length and approximately 5.6 cm in greatest axial diameter, although the prostatic-rectal plane appeared well preserved. Reported fluctuation around the left upper thigh required an ultrasound of the buttocks which demonstrated an extensive hypoechoic collection, measuring approximately 3.5 cm in maximal depth and some extension to the anal verge. Intravenous amikacin was added to the patient's treatment plan and a transperineal drain was placed using ultrasound guidance. Frank pus continued to drain for a few days, and a pelvic scan was repeated once drainage appeared to have stopped. This showed an increase in the size of the abscess, now measuring 6.6 cm. The abscess

appeared multiloculated (Figure 2), indicating posterior tracking around the anus and *levator* muscles, as well as involvement of the urethra anteriorly.
Options of both transurethral and transrectal drainage were considered to tackle the abscess, although the potential risk of either urethro-prostatic or recto-prostatic fistula led consultants of both specialties to find their corresponding approaches very risky.
Symptoms gradually improved and an MRI 23 days after admission (Figure 3) revealed almost complete resolution. The patient was discharged with a urethral catheter in situ, which was removed 16 days later. He was sent home with intravenous ertapenem administered once a day by district nurses for 4 weeks, followed by oral ciprofloxacin for 6 weeks.

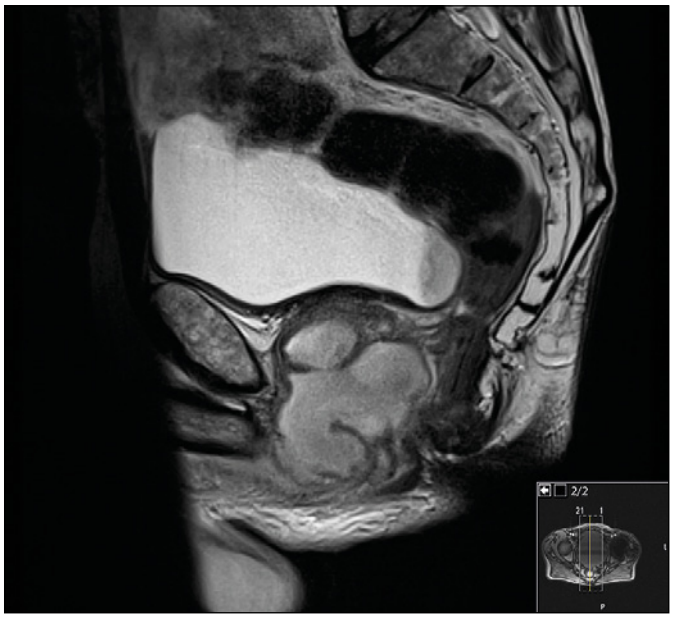

Figure 1. *Large prostatic collection approximately 5.6 cm in greatest craniocaudal length and approximately 5.6 cm in greatest axial diameter.*

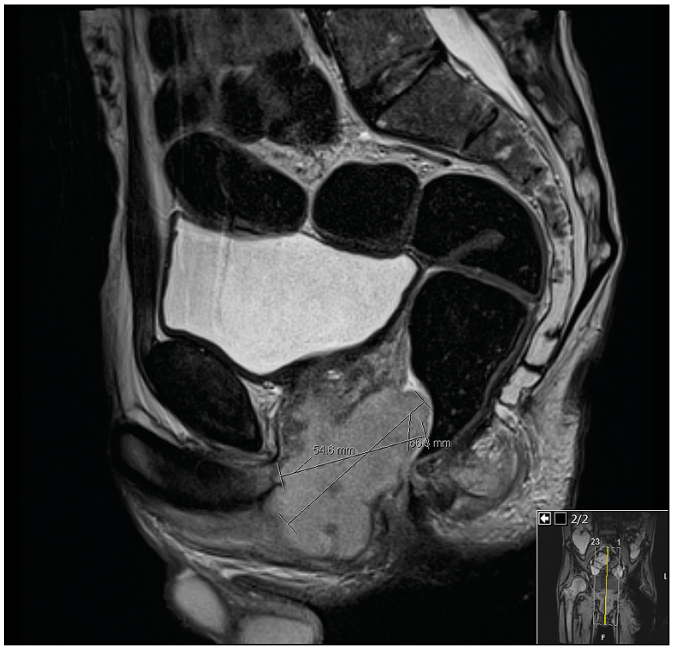

Figure 2. *Interval increase in size of the large prostatic abscess which now is extending posteriorly around the anus tracking inferiorly to the perineum.*

DISCUSSION

The widespread use of antibiotics has led to a substantial decrease in the incidence of PA. Cases currently observed often occur in immunocompromised patients or are caused by atypical microorganisms [1, 2]. PA symptoms of dysuria, perineal pain and acute urinary retention are non-specific, but diagnosis has been greatly aided by developments in medical imaging. Transrectal ultrasound (TRUS) can be useful not only in diagnosis but can also provide possibilities for treatment of PA [3]. Various treatment interventions for PA exist and can be divided into urethral, perineal and rectal approaches. Surgical drainage appears to be the most recommended method for treatment of PA, but the best approach to drainage remains somewhat controversial [4]. No gold standard has been defined and there is a lack of detailed guidelines to delineate the best consecutive steps in the treatment of PA. This results in the treatment offered rarely being based on agreed evidence but rather following surgeons' discretions. Despite its rarity in the antibiotic era, PA can lead to spontaneous rupture into adjacent organs, severe septicaemia and can be fatal if not treated appropriately.
PA often affects patients who have underlying comorbidities that can facilitate infection and bacterial overgrowth. This is the case in diabetes mellitus and HIV [5]. Therefore, the first approach to PA is to assess the patients for conditions that can lead to increased risk of infection. Once identified, medical issues should be corrected as soon as possible, e.g. controlling diabetes or ensuring that the patient is immunocompetent. Any history of antibiotic treatment should be carefully collected to assess the risk of induced resistance due to inappropriate/prolonged/recurrent use of antibiotics. This is also important in guiding the management of these patients.
Imaging assessment is mandatory in these patients, and should include ultrasound scans and CT or MRI. These must be integrated with the clinical findings and they should be considered complementary in the management of PA. Recently, a new classification

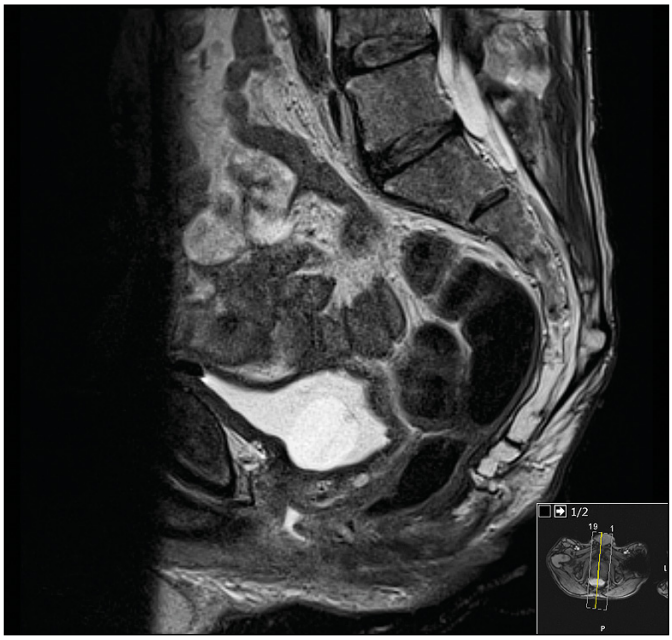

Figure 3. *Marked improvement in appearances. Small residual inflammatory/infective changes are seen.*

Table 1. *Summary of described studies*

Author	n	Treatment	Success rates
El-Shazly et al. [11]	7	Transurethral drainage	100%
Trauzzi et al. [13]	7	Transurethral unroofing + antibiotics HIV+	100%
Elshal et al. [14]	30	Transurethral unroofing	83% but several complications
Gögus et al. [16]	6	Transrectal drainage	83.3%
Collado et al. [17]	23	Transrectal drainage	83.3%
Vyas et al. [9]	48	Transrectal drainage	85.4%

of PA has been proposed based on ultrasound findings, which could be very useful in choosing the appropriate management [6]. However, it needs to be prospectively validated in a clinical setting.
MRI or CT are needed in adjunct to TRUS to exclude lesions that might mimic a PA. In addition, TRUS may not be tolerated by the patients, or it could be contraindicated [6, 7, 8].
Patients with PA should receive treatment with antibiotics and be closely monitored. In case of sepsis onset or persistence/worsening, a surgical approach should be considered. Vyas et al. suggested that patients with PA larger than 2 cm with severe lower urinary tract symptoms and/or leukocytosis should receive drainage immediately [9]. Draining a PA should be always considered in patients at risk of severe complications associated with the PA. It also allows for a sample to be obtained for diagnosis and sensitivity testing.
Several approaches have been proposed to drain a PA, each with specific advantages and drawbacks. These can be classified based on the route used to reach the PA into A) trans-perineal, B) trans-urethral and C) trans-rectal. We have summarized the findings in Table 1, but this should be interpreted with caution as studies and patients are heterogeneous and the study quality is poor.

A. Trans-perineal approach

Traditionally, percutaneous puncture using a transperineal approach has been favoured as it is considered easier, less invasive and more successful than transurethral or transrectal intervention [10]. Many advocate the use of this method as a way of avoiding fistulating disease and subsequent contamination of the cavity. Nevertheless, this access is not without fault. Perineal incision may be more painful for the patient; it can result in impotence due to nerve damage and can still lead to recurrence. Also, damages can be inadvertently caused to the perineal tract of the urethra.

B. Trans-urethral approach

El-Shazly et al. [11] demonstrated a 100% success rate in men with PA treated by transurethral drainage. Transurethral resection of prostate (TURP) is another known treatment which has proved successful [12] as well as transurethral unroofing (TU). Trauzzi et al.[13] published a series of seven HIV patients, three of whom underwent only TU alongside empiric antibiotics, with 100% success in this group. Elshal et al. also performed TU on 30 patients and, although they reported an 83% success rate, they observed some challenging complications needing further treatment, such as septic shock, epididymo-orchitis, urethral diverticulum and urethral stricture [14]. Other known complications of the transurethral approach include retrograde ejaculation, urinary incontinence and the systemic spread of organisms via communicating venous drainage [15].

C. Trans-rectal Approach

Some of the above reported studies used transrectal methods for members of their cohorts in whom the PA were predominantly posteriorly located. Gögus et al. conducted a study of six patients in whom transrectal drainage (TD) was successfully used in 83.3% of cases; recurrence occurred after three weeks

in one patient [16]. Collado et al. [17] managed 31 PA patients, 23 of whom underwent TD. They too reported an 83.3% success rate, with only two patients requiring a second procedure. This method is more comfortable for the patient than the perineal approach and, because the probe and prostate are in closer contact, the needle's trajectory is shorter. Transrectal aspiration has shown similar rates of success in published studies (73%, 85.7%) and is thought to mimic the well-known technique of transrectal prostate biopsies, hence, thought to be easier and faster than other methods. The drainage can be performed with TRUS, and the procedure can be repeated [9]. However, the risk of creating a rectourethral fistula should be considered, as these iatrogenic fistulas may require very complex approaches to achieve healing [18].

Literature on PA is sparse and often focuses on one or few treatment interventions rather than comparing or defining many. It is clearly not yet possible to determine the best approach to treatment, and more work is certainly needed. Based on our experience and available data, we propose an algorithm to manage these patients (Figure 4). The importance of recognising and effectively managing PA should not be underestimated, despite its modern infrequency; fatal cases still occur with conservative treatment. Treatment decisions are evidently multifactorial and should be made with all diagnostic information available from the most current methods of medical imaging. In the case of PA this includes, but is not limited to: size of prostate, size and frequency of abscesses, location of each abscess within the organ, previous pelvic intervention, relevant comorbidities and risk factors, and patient preference.

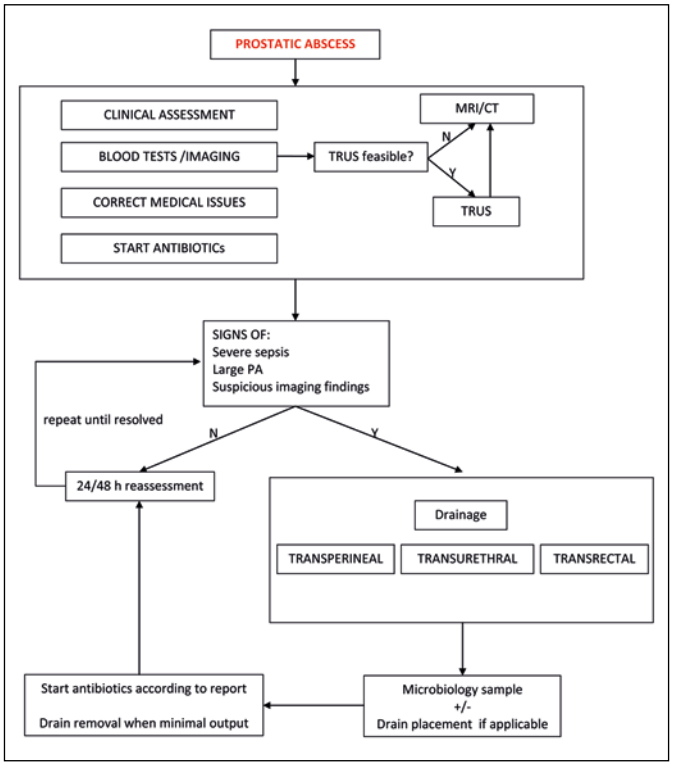

Figure 4. *Suggested management. Patient input and surgeons' preferences are crucial because no agreed guidelines exists.*

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

References

1. Weinberger M, Cytron S, Servadio C, Block C, Rosenfeld JB, Pitlik SD. Prostatic abscess in the antibiotic. Rev Infect Dis. 1988; 10: 231-249.
2. Bae GB, Kim SW, Shin BC, et al. Emphysematous prostatic abscess due to Klebsiella pneumoniae: report of a case and review of the literature. J Korean Med Sci. 2003; 18: 758-760.
3. Göğüş Ç, Özden E, Karaboğa R, Yağci C. The value of transrectal ultrasound guided needle aspiration in treatment of prostatic abscess. Eur J Radiol. 2004; 52: 94-98.
4. Lim JW, Ko YT, Lee DH, et al. Treatment of prostatic abscess: value of transrectal ultrasonographically guided needle aspiration. J Ultrasound Med. 2000; 19: 609-617.
5. Gandhi J, Dagur G, Warren K, Smith N, Khan SA. Genitourinary Complications of Diabetes Mellitus: An Overview of Pathogenesis, Evaluation, and Management. Curr Diabetes Rev. 2016; Oct 19 [Epub ahead of print].
6. Dell'Atti L. A new ultrasound and clinical classification for management of prostatic abscess. Arch Ital Urol Androl. 2015; 87: 246-249.
7. Dell'Atti L. Lidocaine spray administration transrectal ultrasound guided prostate biopsy: five years of experience. Arch Ital Urol. 2014; 86: 340-343.
8. Galosi AB, Montironi R, Fabiani A, Lacetera V, Gallé G, Muzzonigro G. Cystic lesions of the prostate gland: an ultrasound classification with pathological correlation. J Urol. 2009; 181: 647-657.
9. Vyas JB, Ganpule SA, Ganpule AP, Sabnis RB, Desai MR. Transrectal ultrasound-guided aspiration in the management of prostatic abscess: A single-center experience. Indian J Radiol Imaging. 2013; 23: 253-257.
10. Faris G, Metz Y, Friedman B, Appel B, Stein A. Prostatic abscess- diagnosis and treatment. Harefuah. 2008; 147: 594-596, 663.
11. El-Shazly M, El-Enzy N, El-Enzy K, Yordanov E, Hathout B, Allam A. Transurethral drainage of prostatic abscess: points of technique. Nephrourol Mon. 2012; 4: 458-461.
12. Oliveira P, Andrade JA, Porto HC, Pereira Filho JE, Vinhaes AFJ. Diagnosis and treatment of prostatic abscess. Int Braz J Urol. 2003; 29: 30-34.

13. Trauzzi SJ, Kay CJ, Kaufman DG, Lowe FC. Management of prostatic abscess in patients with human immunodeficiency syndrome. Urology. 1994; 43: 629-633.

14. Elshal AM, Abdelhalim A, Barakat TS, Shaaban AA, Nabeeh A, Ibrahiem el-H. Prostatic abscess: Objective assessment of the treatment approach in the absence of guidelines. Arab J Urol. 2014; 12: 262-268.

15. Goyal NK, Goel A, Sankhwar S, Dalela D. Transurethral resection of prostate abscess: is it different from conventional transurethral resection for benign prostatic hyperplasia? ISRN Urol. 2013: 109505.

16. Göğüş C, Ozden E, Karaboğa R, Yağci C. The value of transrectal ultrasound guided needle aspiration in treatment of prostatic abscess. Eur J Radiol. 2004; 52: 94-98.

17. Collado A, Palou J, Garc J, et al. Ultrasound-guided needle aspiration in prostatic abscess. Urology. 1999; 53: 548-552.

18. Amato A, Pellino G, Secondo P, Selvaggi F. Intersphincteric approach for rectourethral fistulas following radical prostatectomy. Tech Coloproctol. 2015; 19: 699-703. ■